and every effort made to diagnose and treat it in its early stages before it has spread to the other carpal bones, since general involvement gives at best, a poor prognosis and a stiff wrist.

(3) From the results obtained in this case and those reported by Deutschlander it seems entirely compatible even in the presence of free pus to remove a carpal bone that has an isolated tuberculous focus, with subsequent eradication of the disease and the production of a normally functioning wrist.

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## FLUOROSCOPIC EXAMINATION OF THE PARANASAL SINUSES*

### SOME CLINICAL NOTES

*By* ROBERT A. POWERS, M. D.
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IN lung infections, sinus disease is of frequent occurrence. For the past year it has been my practice to fluoroscope the sinuses in all cases of respiratory infection. In fifty-six cases I have made radiograms as a check on the accuracy of the fluoroscopic findings.

Fluoroscopy of the sinuses is not an exact method of examination and in no sense is intended as a substitute for radiography. It is simply a preliminary survey which often points to the necessity for a radiographic examination. That the procedure is well worth while is, I think, attested by the fact that many of our medical men who have been getting radiographic reports with the notation, "There is fluoroscopic evidence of sinus pathology," now accompany the chest request with one for sinus examination as well.

There is nothing new in the method of procedure. A good fluoroscopic bucky grid and good accommodation of the eyes are essential. The antrums can be examined in positions corresponding to the Waters and Granger positions by elevating and lowering the patient's chin. In the Granger position a good idea of the density of the antrums can be obtained by rotating the head from side to side. By rotating the head the ethmoid cells can be projected into the orbit, and gross density in this region is usually apparent. By elevating the chin and opening the mouth the sphenoid sinuses, if large, can sometimes be seen, but one is usually in doubt as to their relative density. The frontal sinuses can hardly be outlined at all.

Gross antrum densities are usually quite readily seen. As a rule one cannot differentiate exudate, granulations and sclerosis. Marginal thickening can often be seen. A large single polyp usually stands out quite distinctly. I have seen no fluid levels on the fluoroscope.

Most of the examinations were made on young people with a recalcitrant chronic bronchitis. A large percentage were university students with stubborn respiratory infections. A surprisingly large number were found to have gross sinus infection. The cases were not entirely consecutive. An attempt has been made to determine what value (if any) there is in the use of the fluoroscope in looking for unsuspected sinus pathology during the routine screen examination of the chest.

Of fifty-six cases examined by both screen and plates, sinus disease was suspected in forty-four fluoroscopies and present radiographically in thirty-three. In eleven cases sinus pathology was suspected on the screen and not present on the plate. Poor accommodation of the eyes was probably responsible for most of these positive errors. Not a single case of gross antrum pathology showed negative on fluoroscopic examination.

The classes of cases examined and the percentage of positive sinus infections were as follows:

Of thirty-seven cases of acute and chronic bronchitis twenty-one showed positive sinus infection.

Of ten cases of suspected tuberculosis four showed sinus pathology.

Two out of two cases of bronchopneumonia showed antrum infection.

Of two postpertussis cases one showed antrum involvement.

One case of pleurisy had negative sinuses.

One case of Hodgkin's disease showed extensive sinus involvement.

One case of lung infarct showed antrum infection.

An analysis of the tabulated results in this small series brings into emphasis two important clinical points:

1. A fluoroscopic examination of the chest should be accompanied by a fluoroscopic survey of the paranasal sinuses (where a radiographic examination of the latter is not intended).

2. Sinus pathology should be searched for in all cases of respiratory infection.

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* Read before the Radiology Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

## PERFORATING EYE INJURIES OF YOUNG CHILDREN

### REPORT OF THREE CASES*

*By* FRANK H. RODIN, M. D.
*San Francisco*

RECENTLY we reported three cases of injury to the eyeball by air guns and sling shots.[1] Perforating injuries to the eyeball of children are more tragic because they occur in very young children, are usually complicated by traumatic cataracts, and often result in the loss of the injured eye. This is well illustrated by the following three cases.

### CASE REPORTS

CASE 1. *Injury of Right Eye by Butcher Knife—Traumatic Cataract—Iridocyclitis—Enucleation.*—K. F., a girl, age six years, seen August 31, 1926, had received an injury to the right eye by a butcher knife that day while playing with her sister, who thrust the knife into the eye. Right eye intensely inflamed. There was a corneal cut, which had already closed, with prolapsed iris incarcerated in the wound. The cut extended from the center of the pupillary area, vertically downward, through the sclerocorneal margin and for a few millimeters into the sclera. Pupil was small and eccentric downward. No anterior chamber. Lens was milky and there had been escape of vitreous humor through the sclerocorneal cut. Under general anesthesia the prolapsed iris was excised. The patient received 5 cc. of milk parenterally, which was repeated three days later.

Two weeks later the examination showed a vertical linear corneal scar with iris tissue incarcerated in it (leukoma adhaerens). Pupil was small and irregular. A traumatic cataract was present. Eyeball was soft and free of tenderness and injection.

Examination two months later revealed the iris to

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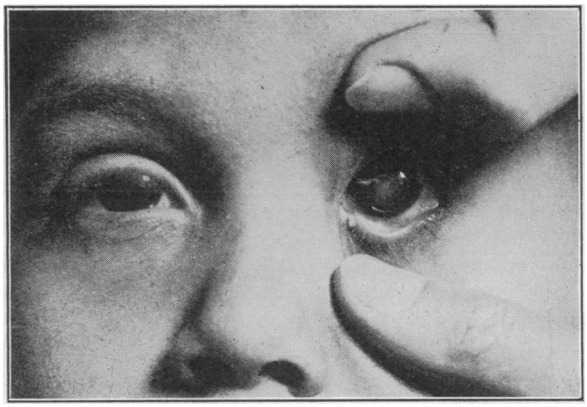

Fig. 1 (Case 3).—Appearance of the left eye showing the traumatic cataract with the corneal scar. The iris is cut through its width with the lower part of the cut iris incarcerated in the corneal scar (leukoma adhaerens) and the upper part adherent to the anterior lens capsule (posterior synechia).

be adherent to the corneal scar, obliterating the pupil. Eyeball was quiet and soft.

The child was next seen on March 8, 1928, nineteen months after the injury. According to the parents the eye had been free of any discomfort till four days previously, when it became very painful. Examination of the right eye showed marked photophobia and blepharospasm. The eye was blind. There was intense circumcorneal injection. The iris was atrophic and incarcerated in the vertical corneal scar and the anterior chamber was obliterated. The cornea was bullous, with vessels invading into it from the sclerocorneal margin. The left eye, with the exception of being sensitive to light, was otherwise normal.

The right eye was enucleated on account of blindness and pain.

CASE 2. *Injury of the Left Eye by Knife—Traumatic Cataract—Obliteration of Pupil.*—G. S., a girl, age three and one-half years, seen February 3, 1927, had cut her left eye with a knife the previous day while playing in the kitchen. Examination of the left eye revealed a ragged cut starting in the bulbar conjunctiva, about 5 mm. from the sclerocorneal margin, at nine on the clock dial, and extending vertically in the cornea for about 9 mm. The pupil was small, 3 mm. in diameter, and eccentric toward the nasal side. A traumatic cataract was present and the anterior chamber was very shallow. The iris at the nasal end of the wound was incarcerated in the cut. The patient received 2 cc. of milk parenterally. Atropin, 4 per cent, was instilled. Two days later the pupil was dilated to 6 mm. and was eccentric nasally. There was a gradual improvement.

Two months later the eye was quiet. The iris was drawn into the corneal scar obliterating the pupil.

CASE 3. *Injury of the Left Eye by Scissors—Traumatic Cataract.*—C. O., a boy, age five years, seen first on March 20, 1928, had received an injury of the left eye, with scissors, two days previously while playing with a younger sister, who thrust the scissors into the eye. Examination of the left eye showed a corneal wound, which had already closed, with prolapsed iris incarcerated in it. The cut was about 4 mm. long at nine on the clock dial, extending over the sclerocorneal margin into the sclera for 3 mm. A beginning cataract was present. Atropin, 4 per cent, was instilled in the eye. The patient received 5 cc. of milk parenterally. Under general anesthesia the prolapsed iris was excised.

Three weeks later the eye was quiet. The visual acuity showed perception of hand movements. A traumatic cataract (Fig. 1) had formed. The pupil was well dilated, as the patient had been using atropin, 1 per cent. There was a broad corneal scar, 2.5 mm. wide and 4 mm. long, at the place of the injury. The iris, at nine on the clock dial, showed a cut through its width, with the lower part of the cut iris incarcerated in the corneal scar (leukoma adhaerens), while the upper part was adherent to the anterior lens capsule (posterior synechia).

## COMMENT

Perforating wounds of the cornea are seen most frequently in very young children, who have injured themselves, or have been injured by their playmates, by knives, scissors, forks, and needles. There is usually present prolapse of the iris. If the cornea is perforated and has no lacerated edges, the wound closes rapidly, incarcerating the prolapsed iris. Injury to the lens capsule or the lens is very common, with the formation of a traumatic cataract. If the wound is large enough there may be escape of the lens with loss of vitreous humor. If the injury also involves the sclerocorneal margin there may be escape of vitreous humor, as was present in Case 1.

If the wound has become infected, other dangers are added: iridocyclitis, hypopyon, keratitis, endophthalmitis and panophthalmitis. Wounds at the sclerocorneal margin present an added danger because of the frequent injury to the ciliary body, with the possibility of sympathetic ophthalmia in the other eye.

In treating perforating corneal injuries it is most important that the eyeball and the eyelids be properly cleansed. In children this is best done under general anesthesia. The surrounding tissue should be cleaned with soap and water and the conjunctival sac thoroughly lavaged with physiologic saline solution or some suitable antiseptic solution. A solution of mercuric chlorid, 1:5000 may be used. Atropin solution should be instilled to combat any iridocyclitis. Simple uncomplicated incised wounds heal very rapidly. A prolapsed iris should be replaced or excised. The margins of the corneal wound should be trimmed if they are very rough and irregular. A bandage should be applied to the eye and the patient confined to bed. Ice compresses may be applied. If there are any signs of inflammation parenteral injections of milk should be given.[2]

If the injury is so extensive that there is no prospect of preserving an eye in a serviceable condition, enucleation should be done at once.

## SUMMARY

1. In three cases of perforating injuries to the eyeball of young children, two were caused by knives, and the third by scissors.

2. In one case enucleation was performed, nineteen months after the injury, for blindness and a painful eye.

3. In the second case there was complete obliteration of the pupil, the iris becoming adherent in the corneal scar.

4. In the third case a traumatic cataract was formed.

5. Young children should not be permitted to play with sharp instruments.

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